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20 February 1968

MEMORANDUM FOR THE RECORD

25X1A SUBJECT : [REDACTED] Meeting at LAC, Burbank
on 16 February 1968

25X1A On 16 February 1968 the undersigned met with Kelly Johnson, [REDACTED] to obtain further definition of the budgetary cost proposal recently submitted to Headquarters on the [REDACTED]. The specific questions posed and the answers thereto are set forth below. The general reaction to the questions was one of complete cooperation. However, Kelly was somewhat dubious of the possibility of receiving an early response when told that [REDACTED] were to be briefed and asked for the necessary funds. He appreciated the intent of such detailed questions, i.e., to be able to answer any questions no matter how insignificant or detailed, so that [REDACTED] could not levy additional investigative studies prior to making a decision. With reference to the questions relating to cost rates, learning curves, etc., a formal proposal will be submitted to Headquarters by 23 February which will answer all of these specific questions. At the same time, a revised technical report will also be submitted.

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Arrangements were made for [REDACTED] PSD/R&D, to [REDACTED] 25X1A 25X1A visit the propulsion facility with Mr. [REDACTED] on 27 February to witness some rocket motors in actual operation using [REDACTED]

1. General

- a. What direct and indirect labor rates are reflected in proposal?

Answer: DCAA approved bidding rates for the California division of LAC. It was pointed out by [REDACTED] that the effect on the overhead rates of the F-12B cancellation has been offset by a sizable helicopter procurement. The rates, etc. will be set forth in detail in a formal proposal to be submitted by 23 February.

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- b. Where will the work be performed and what are the Contractor's plans relative to utilization of manpower and physical facilities?

Answer: The work will be performed in a "skunk works" manner in either building 170 and/or building 82. Appropriate existing facilities and capabilities will be used, as required. For example, the LAC existing plastics facility and specialists in plastics fabrication from the OXCART program will be used to fabricate the wings and tail surfaces.

- c. Have aircraft model specs. and flight test outline been prepared?

Answer: No, however, given a go-ahead, the model spec. would be available in one week.

- d. Has [redacted] requirement been confirmed?

What effort is included in this?

Answer: Yes. Will be included in firm cost proposal. The effort will include non-recurring development costs for LAC design, the engine and the auto-pilot. It will also include materials procurement for six initial vehicles but based on an ultimate buy of at least 25 vehicles.

2. Engineering

- a. Projected manpower charts.

Answer: This will be included in the formal cost proposal. It was brought out during the discussions that the estimated engineering hours for the program or any other ADP program is the sole responsibility of [redacted] subject to 25X1A approval by Kelly Johnson and does not include any inputs from engineering.

- b. Will a mock-up be required?

Answer: Yes, but will be very simple and will require a very small expenditure of funds for which estimated costs have been included in the cost proposal.

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- c. Will a static test article be required?
Answer: One of the first six articles would be used for the static test article.
- d. Have any wind tunnel tests been performed? Will any be required (for separation, etc.) Is this included in bid?
Answer: None specifically, however wind tunnel test data from the U-2R are directly applicable. None are believed to be required for separation. In the event that LAC concludes such tests are required, no change in contract scope would be sought.
- e. What is best current estimate of radar cross section?
Answer: They have made no estimates (Kelly stated that he places no reliance on such estimates). Costs for model testing at their own facility have been included in the estimate. If tests [redacted] are required, additional 25X1A cost would be involved.
- f. [redacted] X1D
- g. [redacted]
- h. What types of construction were considered?
Answer: The construction was dictated by minimum radar cross section which led to a metal fuselage and a plastic wing and tail.

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- i. How extensive a stress analysis has been performed?
Answer: Enough to establish the gross weight.
- j. How extensive was auto-pilot simulation? Were firm specs evolved therefrom?
Answer: The simulation involved a one-week analog study at Rye Canyon. Sufficient to establish the dynamic stability parameters required by the auto-pilot designers.
- k. How extensive were fuel feed tests? Various angles of attack? Can we witness demonstration?
Answer: The tests were conducted on a full scale mock-up of the fuel system and included the complete range of angles of attack. These tests established orifice sizes, etc. Color photographs of the tests were displayed and the opportunity to witness the tests at our convenience was offered.
- l. What are characteristics of proposed fuel - e.g., lowest practical ignition temperature, etc.?
Answer: Data pertaining to the characteristics of this propulsion system and the LMSC experience were submitted at the meeting. These data are available in D/R&D.
- m. How long will tank insulation maintain fuel at a usable temperature prior to ignition?
Answer: A time history will be included in the revised technical report to be submitted with the cost proposal. A time of eight hours was alluded to during the discussion.
- n. How will 200 watts be made available?
Answer: Additional batteries in the payload area would be required. These batteries were not included in the proposed cost.

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3. Tooling

- a. Projected manpower charts.
Answer: Will be submitted in formal proposal.
- b. What types of tooling are included in bid?
What max. production rate would the tooling support? What would be life of proposed tools?
Answer: Tooling appropriate for a production rate of 14 units/month. Certain tooling would have to be duplicated to attain production rates cited in proposal for 100 or 500 units. Life of tools is undetermined.
- c. In what ways could tools be softened or eliminated to support the fabrication of 10 - 25 aircraft?
How much \$ could be saved?
Answer: It was maintained that all proposed tools would be required to build the first article. No money could be saved in this area by reducing the initial buy.
- d. What portions of tooling would be subcontracted?
Any quotes?
Answer: No airframe tooling subcontracts except possibly for some minimum forgings are contemplated. Certain tooling expenses would be involved in the engine/autopilot subcontracts.
- e. Any OX or Earning tools to be used?
Answer: None peculiar to these programs.

4. Manufacturing

- a. Projected manpower charts. (Will be included in the formal proposal.)
- b. What is T_1 factor and basis therefor? (Will be included in the formal proposal.)
- c. What is learning curve and basis therefor? (Will be included in the formal proposal.)

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- d. What portion of manufacturing would be subcontracted? Any quotes?
Answer: No airframe except forgings. Engine and autopilot will be subcontracted.
- e. Derivation of proposed material and equipment costs. (Will be included in the formal proposal.)
- f. Is any GFE required?
Answer: [redacted] fuel, one U-2R and any payload.

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5. Auto-Pilot

- a. Is this a modified stock item or a completely new item?
Answer: This is a completely new system using already developed components.
- b. What is the basis for quotations? What sort of pre-programming capability, etc.?
Answer: A copy of what appears to be a rather definitive ADP prepared request for proposal was furnished at the meeting and is available in R&D. The pre-programming capability outlined in the request for proposal does not include any point to point maneuvering capability.
- c. Have quotes been received (fixed price or cost)?
Answer: Budgetary quotes for quantities of 100, 500 and 1000 units have been received. Vendors have been requested to rebid on the quantity of 25.
- d. What delivery schedule and production rate can vendor maintain?
Answer: Compatible with LAC schedule.
- e. Does bid include cost for vendor tech. reps. for flt. test program?
Answer: Yes.

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6. Engine

- a. What is the basis for quotations?
Answer: The original LPC quote was on the basis of 100 units and included the costs for pumps, etc. ADP now wants to provide all the ancillary components and has requested that LPC rebid only for the thruster and a quantity of 25.
- b. Have quotes been received (fixed price or cost)?
Answer: Budgetary only. See a. above.
- c. What delivery schedule and production rate can vendor maintain?
Answer: Compatible with LAC schedule.

7. U-2R Modifications

- a. Does this quote include all costs (engineering and manufacturing) for all necessary mods and accessories (trapeze, pylon, etc.) to the U-2R?
Answer: Yes. The quote also includes a built-in checkout capability for pre-launch confidence.

8. Flight Test

- a. Projected manpower charts.
Answer: To be submitted in the formal proposal.
- b. Need definition of program. How many articles will be instrumented & launched to prove specifications?
Answer: The cost quotation includes instrumentation of six vehicles.
- c. What is expected attrition rate of articles during test phase?
Answer: Although the cost quotation assumed six vehicles would be lost during the demonstration, Kelly made reference to 10 - 2025X1D possibly being lost.
- d. Has the cost of a [redacted] been included in the bid?
Answer: No. ADP was requested to give some consideration to a radio controlled or other

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type of recovery system, but not for inclusion in the formal proposal due on 23 February.

- e. Has the cost of fuel been included?
Answer: No. However this was presumed to be a very small item.
- f. Has the cost of radar cross section measurements been included?
Answer: Yes. Model testing only at the ADP facility.
- g. What Gov. support is required for flight testing?
Answer: The cost proposal is based on this program being able to take advantage of the existing U-2R test operation at Edwards AFB. If EAFC can not be used for this program and a different facility is required, the program cost may increase considerably. Specific government support required is limited to fuel and spares for the U-2R and the drones and a test facility and support (guards, stock clerks, etc.) of that facility.

9. Other Items

- a. Has the cost of necessary AGE and spares been included in the bid?
Answer: A minimum cost of very unsophisticated AGE in small quantities and a minimum amount of spares (batteries, components, etc.) have been included.
- b. Would this effort eventually increase the "I" support contracts? Has such a budget been prepared?
Answer: Yes. Would increase the maintenance crew by one man if only 25 articles were procured. If more than one U-2R is modified, the support will go up. No such budget has been prepared.
- c. Has the cost of various handbooks, technical and financial reports, etc. been included in the bid?
Answer: Yes. The pricing for pilot's handbook,

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AGE and vendor supplied items and customer number one format has been included.

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- d. Is any GFE required?

Answer: Test facility, the U-2R

- e. With reference to security requirements, Kelly Johnson was asked to have his Security Officer review [redacted] report DE-330-67 dated 11 July 1967 and prepare comments on:

- (1) Proposed procedures
(2) Proposed physical security revisions

(Signature)
He was asked to indicate the cost impact of (2).
Kelly dismissed this request with the statement
that he had met with John Parangosky and [redacted]
[redacted] at Headquarters several months ago and had settled the whole ADP security situation.

- f.

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[redacted] professed complete ignorance of this proposal
and questioned its existence until the letter was located in
Kelly's files. It appears that the [redacted] may have been off the top of Kelly's head without the benefit of an input from

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ASD/R&D/OSA

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Distribution:

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- 2 - CMD/Compt/OSA
- 3 - D/SA
- 4 - D/R&D/OSA
- 5 - COMPT/OSA
- 6 - BPD/Compt/OSA
- 7 - SS/OSA
- 8 - D/M/OSA
- 9 - IDEA/O/OSA
- 10 - D/O/OSA
- 11 - PSD/R&D/OSA
- 12 - ASD/R&D/OSA (Chrono)
- 13 - RB/OSA

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